

21 November 2018

Melanie Morash  
Remedial Project Manager  
U.S. Environmental Protection Agency Region 9  
75 Hawthorne Street, SFD-7-1  
San Francisco, CA 94105

Subject: Well Installation Work Plan Letter Addendum, Former TRW Microwave Site,  
825 Stewart Drive, Sunnyvale, California

Ms. Morash,

This Letter Addendum (addendum) to the Well Installation Work Plan (work plan; AECOM, 2017) has been prepared on behalf of Northrop Grumman Systems Corporation (Northrop Grumman) by AECOM Technical Services, Inc. (AECOM). The purpose of the scope described in this addendum is to further evaluate potential contaminant migration pathways at the former TRW Microwave Site (Site) in Sunnyvale, California (Figure 1). This scope of work was requested by the United States Environmental Protection Agency (USEPA) in their comments dated August 24, 2018 on the Well Installation Report (AECOM, 2018), including additional investigation activities in the northern portion of the Site. The comments requested Northrop Grumman's willingness to drill at least one additional borehole and installation of an additional well to ascertain the source of the elevated trichloroethene (TCE) observed in well T-9B. Northrop Grumman is willing to perform the following scope of work in order to develop further analysis to confirm the existence of three unique hydrostratigraphic units (HSUs) in the northern portion of the Site.

### Background

In August 2017 in accordance with the approved work plan, field work was performed at the Site to evaluate potential contaminant migration pathways in Zone B1 along the southern, western, and northern property boundaries of the Site. Wells T-20B and T-21B (Figure 2) were installed in the shallowest identified HSU, HSU3, at the southern and western property boundaries, respectively. At the northern property boundary near existing well T-9B, a continuous core direct push borehole (referred to as BH9) (Figure 2) was advanced to evaluate the geology and target the three HSUs in Zone B1. Hydropunch samples were collected from each the three identified HSUs in BH9 and were used to provide another line of evidence that the HSUs identified using environmental sequence stratigraphy represented three separate HSUs. Based on the results of the hydropunch data, three monitoring wells (T-22B, T-23B, and T-24B) (Figure 2) were installed in the immediate vicinity of BH9, each well screening one of the identified HSUs. However, when these new monitoring wells were sampled in October 2017 and 2018, the analytical results were not consistent with the August 2017 hydropunch samples (e.g., concentrations of TCE and cis-1,2-dichloroethene detected in the hydropunch sample collected at 33 feet below ground surface [bgs] in BH9 were

substantially higher than those detected in monitoring well T-24B, screened 33 feet to 36 feet bgs, and assumed to be screened across HSU2). In addition, the yield from well T-23B, installed in what was believed to be HSU1, was found to be poor upon well development and sampling, suggesting that this well may not screen a significant HSU. Additional information, including well installation details and analytical results, is included in the Well Installation Report (AECOM, 2018).

#### Proposed Additional Work

Given the poor yield from well T-23B and lack of consistency between the hydropunch samples and the installed monitoring wells, additional investigation in the vicinity of the northern property boundary may provide useful information to refine the conceptual site model and establish the location/presence of three distinct HSUs at the northern downgradient property boundary. Approximate locations of the proposed borings are shown on Figure 2. These locations are to the east and west of the new well cluster including T-22B, T-23B, and T-24B. These boring locations may be refined on site based on the presence of utilities and access for the drill rig.

The investigation will proceed following the same strategy as presented in the work plan for the northern site boundary investigation (Section 3.1):

- A continuous core direct push borehole will be advanced at the first location.
- Based on evaluation of the geology in the continuous core, one or more hydropunch samples will be collected and sent to an offsite laboratory for analysis of volatile organic compounds using United States Environmental Protection Agency (USEPA) Method 8260B.
- While awaiting laboratory results from the first location, drilling of a continuous core direct push borehole will be performed at the second proposed location, followed by evaluation of geology in the continuous core and collection of one or more hydropunch samples from that location.
- Based on both evaluation of the geology and hydropunch sampling results from both locations, one or more monitoring wells may be installed at the Site. Due to the discrepancy between hydropunch and monitoring well samples from the previous field event, temporary wells may be installed in lieu of permanent wells and sampled to evaluate concentrations before a permanent monitoring well is installed. The goal of the well installations is to install (1) a better yielding HSU1 well and, (2) if encountered, a monitoring well that screens higher contaminant concentrations similar to those that have been detected at the northern property boundary in well T-9B.
- If the results from the two proposed boreholes do not support installation of a monitoring well, a third borehole may be advanced and additional hydropunch samples may be collected. A monitoring well will be installed at this third location, if supported by the geology and hydropunch sample results.

All work will be performed following the detailed methods described in the previously approved work plan.



If you have any questions, please contact me at 714.689.7254 or [Rebecca.Mora@aecom.com](mailto:Rebecca.Mora@aecom.com).

Sincerely,

A handwritten signature in cursive script that reads "Rebecca Mora".

Rebecca Mora  
Project Director

cc: Shantal Der Boghosian, Northrop Grumman Corporation

References:

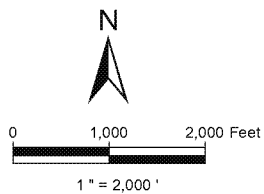
AECOM. 2017. Well Installation Work Plan, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale California. April 13.

AECOM. 2018. Well Installation Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale California. May 3.

Attachments:

Figure 1 – Site Location

Figure 2 – Proposed Boring Locations



Former TRW Microwave Site

Site Location

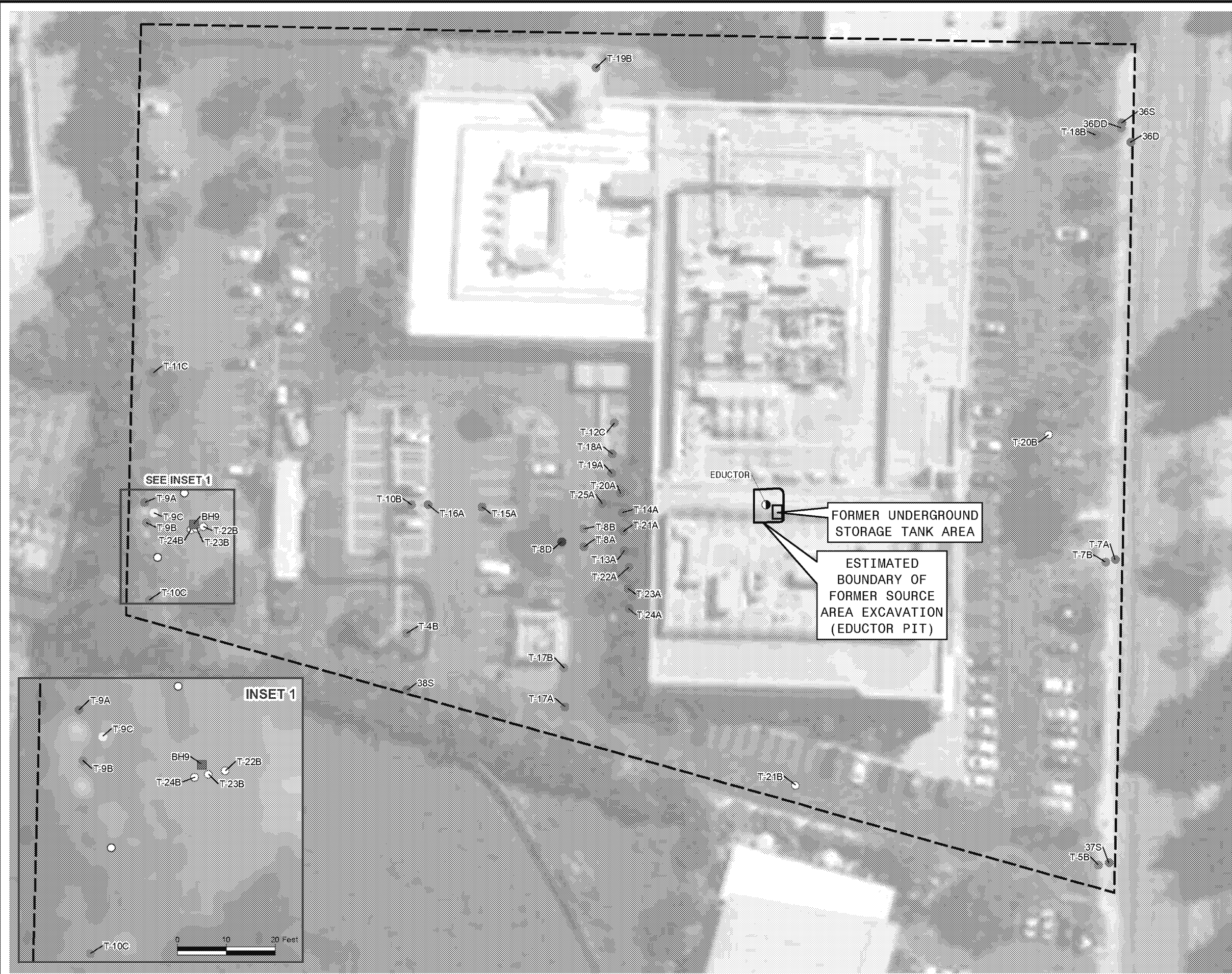
Date 02-2017

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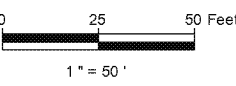
**AECOM**

Figure

1



- LEGEND**
- A-ZONE MONITORING WELL
  - B1-ZONE MONITORING WELL
  - B2-ZONE MONITORING WELL
  - B3-ZONE MONITORING WELL
  - B4-ZONE MONITORING WELL
  - EDUCATOR - DESTROYED 2014
  - PROPOSED BORING LOCATION
  - MONITORING WELL INSTALLED 2017
  - APPROXIMATE LOCATION OF BH9 - INSTALLED 2017
  - - - PROPERTY BOUNDARY



Former TRW Microwave Site

**Proposed Boring Locations**

Date 11-2018	<b>AECOM</b>	Figure
Project No. 60536411		2